U.S. Fish & Wildlife Service

The Coastal Program

Success on the North Carolina Coast

Caring for Our Coastal Habitats

Restoring An Atlantic White Cedar Bog

The Coastal Program in North Carolina is working with the Pocosin Lakes National Wildlife Refuge and North Carolina State University to restore approximately 18,000 acres of Atlantic white cedar/bald cypress bog. The Atlantic white cedar ecosystem is globally endangered, with over 95% of the historic habitat lost. The site was previously owned by a private commercial operation that intended to mine the area for peat-- an activity that requires clearing, ditching, and draining of the area.

Close-up of white cedar planting.

The Perils of Peat Mining

Peat forms over thousands of years as a result of vegetation depositing organic material faster than it can decompose; it retains nitrogen from growing plants and other chemicals that flow through it from rainwater. Peat can provide water filtering benefits. If, however, peat bogs are ditched and are allowed to decompose, they can release excess nutrient loads into coastal rivers and estuaries on par with the largest industrial discharges.

This site had created a very large bank of nitrogen, as well as stores of mercury from ancient volcanic activity and more recent combustion of fossil fuels and smelting. Before restoration, the water draining from the site exceeded North Carolina water quality standards for mercury and the nitrogen in the runoff was likely contributing to excess algal growth (eutrophication) downstream.

Restoration Takes Root

Approximately 2,000 acres of this unique habitat have been replanted with Atlantic white cedar seedlings, with plans to continue replanting and to restore the natural wetland function by installing 14 water control structures on canals that drain the area. This restoration project will not only benefit many species of wildlife, such as black bear, river otter, bobcats, red-cockaded woodpeckers, neotropical birds and the endangered shortnose sturgeon, but will help improve water quality within the Albemarle/Pamlico Estuary. Restoring the hydrology and native plant communities in this drastically disturbed peat bog system turns an environmental liability (drained decomposing peat bog polluting downstream coastal estuary) into an environmental asset (functional wetland with surface water discharges cleaner than rainwater), while improving fish and wildlife habitat. The site became part of the National Wildlife Refuge System in 1990.

A young volunteer helps plant white cedar seedlings. USFWS photo

The Removal of Quaker Neck Dam

The North Carolina *News and Observer* described the Quaker Neck dam removal project as "lead(ing) a national dam-busting trend." If this is so, then a lot of fish are going to be very happy! The Quaker Neck dam was located on the Neuse River, near Goldsboro, NC. Its removal in December 1997, opened up over 75 miles of river and 925 miles of tributaries to spawning saltwater fish. For the first time in 45 years, striped bass, sturgeon, American shad and other types of anadromous fish have been able to complete their life cycles in the upper Neuse River.

Environmental Costs of Dams

Centuries before the Quaker Neck dam was put in, and as recently as some of the participants' grandfathers could recall, the fish in the Neuse River were so abundant that it was inconceivable people could ever significantly "fish them out." Environmental problems associated with dams were recognized as early as 1881, when S.G. Worth, the North Carolina Fish Commissioner at the time, wrote of the near disappearance of fish in local streams. Worth concluded that this was a result of "first, from cutting [the fish] off from favorite spawning grounds with dams, and second, by increased fishing." The inconceivable moment had arrived.

Since then, thousands of dams have been built in this country, many at the expense of important fish habitat. Today, there are about 75,000 dams in the U.S., the vast majority of which are small and privately Chris Swenson owned. Since 1986, dams looking for relicensing are required to show economic benefits that outweigh their costs to wildlife and recreation. The Quaker Neck Dam was the first dam on a large river to be removed for purely environmental reasons in the United States.

"It was just the right thing to do. Once all the people...saw it as a shared responsibility, it was completely doable."

Mike Wicker, USFWS
Raleigh Field Office.

Quaker Dam before removal.

The Power of Partnerships

Three of the primary partners in the project, Mike Wicker (U.S. Fish and Wildlife Service, Albemarle-Pamlico Coastal Program Coordinator), Buzz Bryson (Carolina Power and Light, CP&L), and John Morris (Director of North Carolina Division of Water Resources, DWR), received the 1997 Governor's Award for Water Conservationist of the Year for their joint efforts in removing the dam. They were assisted by Coastal America, U.S. Army Corps Of Engineers, Environmental Protection Agency (EPA), National Marine Fisheries Service (NMFS), North Carolina Department of Environment and Natural Resources (DENR), and a host of conservation and professional groups.

According to Mike Wicker and his partners, dam removal can be a painless process. "The key," he says, is to "consider the project as a joint burden and your goal as a joint resolution—one that addresses everyone's needs." Many hands make easy work and the pooled technical and financial resources for such joint ventures are enormous. The Service had identified the Quaker Neck project as a priority due to the site's singular capability for opening up such vast amounts of fish passage.

EPA provided a $100,000 grant to take the dam out after being accepted as a Coastal America project, and the Service worked with DENR to write the Environmental Assessment for the demolition work. CP&L had agreed to bringing the dam down in the early 1990s when the U.S. Corps of Engineers agreed to design an alternate way of getting water out of the river to supply CP&L's needs so that the large coal fired power plant that used the dam could continue to produce electricity. The Marine Corps saw it as an opportunity to use the demolition as training, and the Fish and Wildlife Foundation and the State Marine Fisheries Resource Grant Program put up the remainder of the necessary funds. DWR provided a well respected senior engineer to oversee the demolition. The State Attorney's General's Office worked with CP&L to address legal problems.

Setting A National Example

This dam removal project in North Carolina set a national example. NMFS created a documentary film on the process so it could be used elsewhere. In June 1998, an additional dam in the Neuse River Basin (Cherry Hospital) was removed—also voluntarily through joint partnership efforts. There is growing support for dam removals to reclaim our legacy of wild rivers, wild fish, and clean, healthy, water.

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